

TENT COOPERATION TREA

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference PCT1892HHBRon	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/09701	International filing date (<i>day/month/year</i>) 01.09.2003	Priority date (<i>day/month/year</i>) 30.08.2002
International Patent Classification (IPC) or both national classification and IPC F16K31/04		
Applicant COOPER CAMERON CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 27.02.2004	Date of completion of this report 03.09.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Ott, S Telephone No. +49 89 2399-7429 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/09701

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-12 as originally filed

Claims, Numbers

1-23 as originally filed

Drawings, Sheets

1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/09701

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-23
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-23
Industrial applicability (IA)	Yes: Claims	1-23
	No: Claims	

2. Citations and explanations

see separate sheet

POINT V

V-1. The subject-matter of claims 1, 6 does not meet the requirements of clarity in the sense of Art. 6 PCT.

It is in particular not clear what is meant by the expression "in each case" in claim 1, or which gearwheels are meant in claim 6 by "both".

It is furthermore unclear how a double helical spur-wheel gear can provide self-locking characteristics; the prior art only refers to worm gears with self-locking characteristics (see also D1: EP-0305762, abstract).

At last, the arrangement described in claim 10, in which the flexible cup-shaped toothed sleeve of the harmonic drive is connected to the drive shaft, appears to be impractical since the output wave generator provides, if any, a low torque, high speed rotation to the spiral-toothed gearwheel, which is contradictory with the required high torque, low speed rotation for actuating the regulating device.

V-2. D2: DE-3607899 discloses a regulating device for the linear regulation of an actuating element (4), which is connected for movement to a ball spindle drive (13, 14) for the conversion of a rotational movement into a linear movement, whereby the rotational movement can be transferred to the spindle drive from at least one motor (9) via a gear unit (11), wherein the gear unit exhibits a spur-wheel gear, with at least one first and second (12) gearwheel, whereby at least one motor (9, 9') is arranged at both sides of the ball spindle drive and each of the motors (9, 9') is connected for movement with a second gearwheel (11').

The subject-matter of claim 1 differs from the disclosure of D2 in that the gearwheels are self-locking, helically toothed gearwheels which are formed as a double helical gearwheels.

Due to the deficiencies mentioned above (see V-1.), the feature of self-locking gearwheels does not have a limiting effect on the scope of protection of claim 1.

The objective technical problem to be solved is therefore to reduce the dimensions of the bearings of the drive trains. The solution to use double helically toothed gearwheels, though not disclosed in the prior art, is nevertheless obvious to the skilled man, as it represents a common practice in the field of mechanical engineering in order to reduce the forces applying to the bearings of drive trains.

The subject-matter of claim 1 does therefore not meet the requirements of inventive step in the sense of Art. 33(3) PCT.

**INTERNATIONAL PRELIMINARY
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International application No. PCT/EP03/09701

V-3. D2 also discloses the subject-matter of claims 2-8, 11-15, 17-18, 21-23.

D2 in combination with D3: US-5370011 (see col.4, l.29-45, and col.5, l.29-33) discloses the subject-matter of claim 9-10, 16 since D3 discloses both a harmonic drive and a position sensor for the same purpose as in the application.

D2 in combination with D4: US-3998108 discloses the subject-matter of claims 19-20.

The subject-matter of claims 2-23 does not meet the requirements of inventive step in the sense of Art. 33(3) PCT.

V-4. Following defect is pointed out:

Rule 6.3b)i) and ii) PCT: incorrect two part form of independent claims with regard to D1.